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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,878	12/13/2005	Zhen-Yu Yang	CL2203USPCT	2511
23906 7590 05/29/2009 E I DU PONT DE NEMOURS AND COMPANY LEGAL PATENT RECORDS CENTER BARLEY MILL PLAZA 25/1122B 4417 LANCASTER PIKE WILMINGTON, DE 19805			EXAMINER HU, HENRY S	
			ART UNIT 1796	PAPER NUMBER
			NOTIFICATION DATE 05/29/2009	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTO-Legal.PRC@usa.dupont.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,878	<b>Applicant(s)</b> YANG, ZHEN-YU	
	<b>Examiner</b> HENRY S. HU	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on Election of February 9, 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-19,31,32,34-36,48 and 49 is/are pending in the application.
- 4a) Of the above claim(s) 5-19,31,32,34-36,48 and 49 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-19,31,32,34-36,48 and 49 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Library search report 257443</u>       |

### DETAILED ACTION

1. This Application is a **371/PCT/US04/ 20706** with a US priority at June 27, 2003. This Office Action is in response to **Election** filed on February 9, 2009, which is in response to Restriction requirement filed on January 7, 2009. **Applicant's Election of Group I (Claims 1-4) without traverse** is acknowledged. As discussed earlier, Applicants' **Pre-Amendment** and **two IDS** (2 page each) are filed so far. With such a pre-amendment, **Claims 2-3 and 6-7 are amended; Claims 20-30, 37-47 and 50-58 are cancelled, while no new claim is added.**

2. **Claims 1-19, 31-32, 34-36 and 48-49 with seven independent claims (Claims 1, 5, 9, 18, 31, 32 and 48) are now pending**, while all non-elected Claims 5-8 (Group II), Claims 9-17 (Group III) and Claims 18-19, 31-32, 34-36 and 48-49 (Group IV) are withdrawn from consideration. Examiner **accepts Applicants' two drawing sheets with Figures 1-2** (a brief description is on page **10**). An action follows. (See international search report in Applicants' priority paper **WO 2005/003083 A1 to Yang**)

### *Claim Rejections - 35 USC § 102*

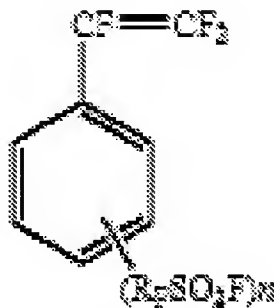
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The limitation of parent **Claim 1** in present invention relates to **a monomer** having the following structure:



wherein  $R_f$  is linear or branched perfluoroalkene group, optionally containing oxygen or chlorine; and  $n$  is 1 or 2. See other limitations of dependent **Claims 2-4**.

5. **Claims 1-4 are rejected** under 35 U.S.C. 102(b) as being anticipated by **Lu et al.** (CN 1349962 A, also see English abstract submitted by Applicants) or **Lu et al.** (CN 1346707 A).

Regarding the “trifluorostyrene type monomer having the specific structure  $CF_2=CF-C_6H_4-(R_F-SO_2-F)_n$ ” limitation of parent **Claim 1**,  $R_F$  can be a bivalent linear or branched perfluoroalkene group, optionally containing oxygen or chlorine; and  $n$  is 1 or 2. **Lu et al.** in both CN patents have prepared “some” claimed monomers with chemical structure reading on  $CF_2=CF-C_6H_4-(R_F-SO_2-F)_n$  when the  $R_F$  is  $-(CF_2-CF_2)_{1-3}-O-CF_2-CF_2-$ , while  $n$  is 1.

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It is noted that Applicants have also submitted English abstract for **Lu et al.** (CN 1349962 A) (see XP-002303652 in IDS filed on August 7, 2006).

According to Lu et al. in year 2002 with 102(b) date, the monomers are synthesized by multiple steps including: (A) coupling iodobenzene with iodoalkane derivatives in the presence of Cu, (B) nitrating with  $\text{HNO}_3/\text{H}_2\text{SO}_4$ , (C) reducing to amine derivative, (D) diazotizing with KI, and (E) coupling the compound with  $\text{CF}_2=\text{CF}-\text{ZnBr}$  to obtain the desirable trifluorovinyl moiety.

6. To be specific, see **Lu “962” at abstract; page 1, line 1-6; see Lu “707” at abstract; page 1, line 1-16.** Particularly see the **third** co-monomer having the  $\text{R}_f^2$  group as shown in terpolymer. It is noted that the monomer contains sulfonyl fluoride functionality, while resulted polymers can be converted to sulfonic acid functional group according to Lu and also the art. Therefore, Lu et al. in both CN patents anticipate current limitation of parent Claim 1.

7. Regarding the specific  $\text{R}_f$  and n factors as disclosed in **Claims 2-4**, the structures of both Lu's  $\text{CF}_2=\text{CF}-\text{C}_6\text{H}_4-(\text{R}_f-\text{SO}_2-\text{F})_n$  with the  $\text{R}_f$  being  $-(\text{CF}_2-\text{CF}_2)_{1-3}-\text{O}-\text{CF}_2-\text{CF}_2-$  and n being 1 clearly read on all the limitations of Claims 2, 3 and 4.

### ***Conclusion***

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8. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to a monomer having the following structure

$\text{CF}_2=\text{CF}-\text{C}_6\text{H}_4-(\text{R}_\text{F}-\text{SO}_2-\text{F})_n$  with the  $\text{R}_\text{F}$  and  $n$  factors as specified in parent Claim 1:

US 6,080,501 to Kelly et al. discloses a method of using a solid polymer electrolyte containing a perfluorinated sulfonic acids derived from styrene, quaternary amine-containing polystyrene, and NAFION (column 3, line 38-44). It is useful in making fuel cell with integral fuel storage (title). Although styrene and quaternary amine-containing polystyrene are used as comonomers, Kelly's sulfonyl-containing monomer (NAFION) still contains no styrene bivalent group in between and is thereby structurally different from the claimed structure of  $\text{CF}_2=\text{CF}-\text{C}_6\text{H}_4-(\text{R}_\text{F}-\text{SO}_2-\text{F})_n$ . Therefore, Kelly fails to teach or fairly suggest the current monomer limitation of parent Claim 1.

9. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu whose telephone number is (571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Vasu Jagannathan, can be reached on (571) 272-1119. The **fax** number for the organization where this application or proceeding is assigned is **(571) 273-8300** for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Peter D. Mulcahy/  
Primary Examiner, Art Unit 1796

/Henry S. Hu/  
Examiner, Art Unit 1796

May 20, 2009